

**Information Systems Development Support (ISDS) Contract  
Work Order (CWO) Implementation Plan**

for

**CWO 32 - Advanced Communications Services (ACS) Telemetry  
Channel Assembly (TCA) Common Software**

Developed by  
**The ISDS Team  
2700 Foothill Blvd., Suite 200  
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Under

**Contract No. 960100**  
Control Number: WIP\_32.DOC Rev 0  
DRD # MA005  
**20 December 1995**

for the

**California Institute of Technology  
Jet Propulsion Laboratory  
4800 Oak Grove Drive  
Pasadena CA 91109-8099**

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Mr. Bill Stinnett  
JPL CWO Manager

## **ATTACHMENT NO. 1 “CWO 32 STATEMENT OF WORK”**

The period of performance for this CWO is from 12/16/95 through 9/15/96.

The effort is funded through 9/15/96.

**CWO TITLE:** Advanced Communications Services (ACS) Telemetry Channel Assembly (TCA) Common Software.

### **1. Background**

This Statement of Work (SOW) is for the development of DSN Advanced Communications Service (ACS) Telemetry Channel Assembly (TCA) Common Software.

The ACS will implement the new fault-tolerant delivery service for near-real-time and non-real-time data flows.

- Provide reliable and fault-tolerant end-to-end- data delivery Based on COTS package (e.g. ISIS).

Requirements derived from the ACS PDCR (4/5/95) that are unique to the ACS design have been allocated to the following elements:

- Reliable Network Service (RNS) - Data Delivery
- Common Software - RNS API
- **Common Software - TCA**
- Monitor and Control (GMP)
- CDR

### **2. Guidelines, Constraints and Assumptions**

- For each step of the CWO, all existing capabilities shall be maintained
- GFE-RNS including ISIS and related documentation
- ACS TCA common software design shall meet DSN MSW infrastructure
- **TCA Platform - 68040 with VxWorks**

### **3. Work To Be Performed**

1. Port MSW to new TCA platform (68040 with VxWork) and support TCA/SCP level 5 acknowledge for selected telemetry streams.
  - Port 890-201 to platform
  - Port MSW to platform
  - Support TCA application modification

- Support test of level 5 for TCA - SCP testing
2. Provide user documentation and submit to SPMC
  3. TCA integration support

### 3.1 Derived Requirements

Regarding porting the Multi-Use Software (MSW) to 68040 with VxWorks Platform.

- Initialization - Verify the capability of initiating MSW and application and tasks, and synchronizing the initialization sequence of these tasks.
- Buffer/Queue Management - Validate buffer management utilities to allocate buffers to users, deallocate buffers, and return memory to a common pool when there are no remaining users for a buffer.
- 890-131 Protocol - Validate the Logical Data Path and Message Routing table maintenance and the 890-131 Direct Protocol (DP), Non-Acknowledges Protocol (NAP) and Positive Acknowledge with Retries (PAR) Protocol. It also validates Functional Address Table (FAT) maintenance and LAN statistics.
- 890-201 (Lite) - Convert all the PDOS calls to VxWorks and port to the TCA platform. Test the 890-201 software with the VxWorks and compare the data results on PDOS as VxWorks.

## 4. Implementation Schedule

1. Produce a Work Implementation Plan (WIP) for the tasks defined in this Statement of Work, which includes a detailed schedule for the delivery of items. The WIP is to be delivered to JPL 30 days after start of the CWO. The period for accomplishment of the work 12/18/95 - 9/15/96.
2. Task element/function and Schedule (Start Date - Complete Date)
  - TCA common software
    - Start Date: 12/18/95
    - **Provide Engineering version for testing: 6/1/96**
    - **Delivery to SPMC: 9/15/96**
3. Subsystem Integration Support
  - **Start Date: 6/1/96**
  - Complete Date: 9/15/96

### **ATTACHMENT NO. 2 "CWO 32 FUNDING DETAILS"**

The period of performance for this CWO 32 is from 12/16/95 through 9/15/96.

Funding authorization is through 9/15/96.

Effort under this CWO shall be charged using the following JPL account number.

JPL Account Number  
412-28162-0-3940

Estimated Staffing:

There is little flexibility in the available budgets for effort under this CWO. For that reason, the effort should be thought of as a “design to cost” activity, where the effort must be scoped to match the available budget.

Staffing levels are to be determined by the Contractor. It is expected, however, that the effort should require somewhat less than one (1) full time programmer when fully staffed. In addition, minimum CWO management, CM, QA, and documentation support would be expected. The bottom line cost (including fee) should be \$60K or less.

The JPL CWO Manager is Chaw Hung on #306-6320.

